

CLAIMS

What is claimed is:

1. A method comprising:
determining, *in vivo*, a myocardial tissue displacement
5 based at least in part on a sensed potential; and
diagnosing a cardiac condition based at least in part on the
displacement.
2. The method of claim 1 wherein determining comprises
10 determining a time derivative of a myocardial tissue displacement based
at least in part on a sensed potential.
3. The method of claim 2, wherein the derivative represents
one of myocardial tissue velocity and acceleration.
- 15 4. The method of claim 1, wherein determining the myocardial
tissue displacement is performed during systole.
5. The method of claim 1, wherein determining the myocardial
20 tissue displacement is performed during diastole.
6. A method comprising:
determining, *in vivo*, a myocardial tissue displacement
based at least in part on a sensed potential; and
25 determining a cardiac therapy based at least in part on the
displacement.
7. The method of claim 6 wherein determining comprises
determining a time derivative of a myocardial tissue displacement based
30 at least in part on a sensed potential.

8. The method of claim 7, wherein the derivative represents one of myocardial tissue velocity and acceleration.

5 9. The method of claim 6, wherein determining the myocardial tissue displacement is performed during systole.

10 10. The method of claim 6, wherein determining the myocardial tissue displacement is performed during diastole.

11. A method comprising:
determining, *in vivo*, a left ventricular ejection fraction based at least in part on a sensed potential;
determining, *in vivo*, an activity test parameter; and
15 determining a survival risk based on the left ventricular ejection fraction and the activity test parameter.

12. A method comprising:
determining, *in vivo*, a first myocardial tissue displacement
20 during systole based on a sensed potential;
determining, *in vivo*, a second myocardial tissue displacement during diastole; and
determining the difference between the first displacement and the second displacement.

25 13. The method of claim 12, wherein the determining a first displacement includes detecting a feature of cardiac activity, initiating a systolic delay, sensing a potential in a potential field, and correlating the potential to a first displacement.

30 14. The method of claim 12, wherein the determining a second displacement includes detecting a feature of cardiac activity, initiating a

diastolic delay, sensing a potential in a potential field, and correlating the potential to a second displacement.

15 15. The method of claim 12, further comprising determining a cardiac therapy based at least in part on the difference.

16. The method of claim 12, further comprising diagnosing a cardiac condition based at least in part on the difference.

10 17. The method of claim 12, further comprising determining a fractional shortening based at least in part on the difference.

18. An implantable device comprising:

means for determining a myocardial tissue displacement based at least in part on a sensed potential; and

15 means for diagnosing a cardiac condition based on the displacement.

19. The implantable device of claim 18 and further comprising:

20 means for determining a cardiac therapy based on the displacement.

20. An implantable cardiac system comprising:

an implantable device having a case capable of acting as an electrode;

25 one or more implantable leads having one or more electrodes wherein the one or more leads are connectable to the device; and

30 circuitry that is operative to deliver an electrical signal to a first electrode position in or adjacent to a cardiac chamber, sense a potential generated by the delivered electrical signal at a second electrode position, and determine a myocardial tissue displacement based at least in part on the sensed potential, wherein the circuitry is operative to diagnose a cardiac condition based at least in part on the displacement.

21. The system of claim 20 wherein the one or more implantable leads comprises at least two leads including a first lead that is configured for placement in a right ventricle and a second lead that is configured for placement in a left ventricle.

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22. The system of claim 21 wherein the circuitry is operative to deliver an electrical signal to a first electrode carried by the first lead, and to sense a potential generated by the delivered electrical signal at a second electrode carried by the second lead.

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